

Expéditeur : le BUREAU INTERNATIONAL

PCT

NOTIFICATION DE TRANSMISSION DE COPIES
DE LA TRADUCTION DU RAPPORT D'EXAMEN
PRÉLIMINAIRE INTERNATIONAL
SUR LA BREVETABILITÉ (CHAPITRE I OU CHAPITRE II
DU TRAITE DE COOPERATION EN MATIÈRE DE BREVETS)
(règles 44bis.3.c) et 72.2 du PCT)

Destinataire :

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REÇU

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| Date d'expédition (jour/mois/année) 08 septembre 2006 (08.09.2006) | |
| Référence du dossier du déposant ou du mandataire CP 61123 | NOTIFICATION IMPORTANTE |
| Demande internationale n° PCT/FR2004/003129 | Date du dépôt international (jour/mois/année) 06 décembre 2004 (06.12.2004) |
| Déposant CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE (CNRS) etc | |

1. Transmission de la traduction au déposant.

Le Bureau international transmet ci-joint copie de la traduction en langue anglaise du rapport préliminaire international sur la brevetabilité (chapitre I).

Le Bureau international transmet ci-joint copie de la traduction en langue anglaise du rapport préliminaire international sur la brevetabilité (chapitre II).

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Aucun

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3. Rappel concernant la traduction dans la ou l'une des langues officielles de l'office ou des offices élus.

Il est rappelé au déposant que, lorsqu'une traduction de la demande internationale doit être remise à un office élu, cette traduction doit comporter la traduction de toute annexe du rapport préliminaire international sur la brevetabilité (chapitre II).

Il appartient au déposant d'établir la traduction en question et de la remettre directement à chaque office élu intéressé dans le délai applicable (règle 74.1). Voir le volume II du *Guide du déposant du PCT* pour de plus amples renseignements.

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TRAITÉ DE COOPÉRATION EN MATIÈRE DE BREVETS

PCT

RAPPORT PRÉLIMINAIRE INTERNATIONAL SUR LA BREVETABILITÉ (chapitre I du Traité de coopération en matière de brevets)

(règle 44bis du PCT)

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| Référence du dossier du déposant ou du mandataire CP 61123 | POUR SUITE À DONNER | | Voir le point 4 ci-dessous |
| Demande internationale no. PCT/FR2004/003129 | Date du dépôt international (<i>jour/mois/année</i>) 06 December 2004 (06.12.2004) | Date de priorité (<i>jour/mois/année</i>) 04 December 2003 (04.12.2003) | |
| Classification internationale des brevets (8 ^e édition, sauf indication d'une édition antérieure) Voir les informations pertinentes dans le formulaire PCT/ISA/237 | | | |
| Déposant CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE (CNRS) | | | |

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|--|-------------------------------------|---|-------------------|--------------------------|-------------|----------|--------------------------|--------------|--|--------------------------|-------------|--------------------------------|-------------------------------------|------------|---|--------------------------|-------------|--------------------------|--------------------------|--------------|---|--------------------------|---------------|--|
| <p>1. Le présent rapport préliminaire international sur la brevetabilité (chapitre I) est établi par le Bureau international au nom de l'administration chargée de la recherche internationale selon la règle 44bis.1.a).</p> <p>2. Ce RAPPORT comprend un total de 6 feuilles, y compris la présente feuille de couverture.</p> <p>Dans les feuilles jointes, toute référence à l'opinion écrite de l'administration chargée de la recherche internationale doit être entendue, à la place, comme une référence au rapport préliminaire international sur la brevetabilité (chapitre I).</p> | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>3. Le présent rapport contient des indications relatives aux points suivants :</p> <table> <tbody> <tr> <td><input checked="" type="checkbox"/></td> <td>Cadre n° I</td> <td>Base de l'opinion</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Cadre n° II</td> <td>Priorité</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Cadre n° III</td> <td>Absence de formulation d'opinion quant à la nouveauté, l'activité inventive et la possibilité d'application industrielle</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Cadre n° IV</td> <td>Absence d'unité de l'invention</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>Cadre n° V</td> <td>Déclaration motivée selon l'article 35.2) quant à la nouveauté, l'activité inventive et la possibilité d'application industrielle; citations et explications à l'appui de cette déclaration</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Cadre n° VI</td> <td>Certains documents cités</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Cadre n° VII</td> <td>Certaines irrégularités relevées dans la demande internationale</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Cadre n° VIII</td> <td>Certaines observations relatives à la demande internationale</td> </tr> </tbody> </table> <p>4. Le Bureau international communiquera le présent rapport aux offices désignés conformément aux règles 44bis.3.c) et 93bis.1 mais pas avant l'expiration du délai de 30 mois à compter de la date de priorité (règle 44bis.2), sauf si le déposant a présenté une requête expresse à cet égard en vertu de l'article 23.2).</p> | <input checked="" type="checkbox"/> | Cadre n° I | Base de l'opinion | <input type="checkbox"/> | Cadre n° II | Priorité | <input type="checkbox"/> | Cadre n° III | Absence de formulation d'opinion quant à la nouveauté, l'activité inventive et la possibilité d'application industrielle | <input type="checkbox"/> | Cadre n° IV | Absence d'unité de l'invention | <input checked="" type="checkbox"/> | Cadre n° V | Déclaration motivée selon l'article 35.2) quant à la nouveauté, l'activité inventive et la possibilité d'application industrielle; citations et explications à l'appui de cette déclaration | <input type="checkbox"/> | Cadre n° VI | Certains documents cités | <input type="checkbox"/> | Cadre n° VII | Certaines irrégularités relevées dans la demande internationale | <input type="checkbox"/> | Cadre n° VIII | Certaines observations relatives à la demande internationale |
| <input checked="" type="checkbox"/> | Cadre n° I | Base de l'opinion | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | Cadre n° II | Priorité | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | Cadre n° III | Absence de formulation d'opinion quant à la nouveauté, l'activité inventive et la possibilité d'application industrielle | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | Cadre n° IV | Absence d'unité de l'invention | | | | | | | | | | | | | | | | | | | | | | |
| <input checked="" type="checkbox"/> | Cadre n° V | Déclaration motivée selon l'article 35.2) quant à la nouveauté, l'activité inventive et la possibilité d'application industrielle; citations et explications à l'appui de cette déclaration | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | Cadre n° VI | Certains documents cités | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | Cadre n° VII | Certaines irrégularités relevées dans la demande internationale | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | Cadre n° VIII | Certaines observations relatives à la demande internationale | | | | | | | | | | | | | | | | | | | | | | |

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| <p>Date d'établissement du présent rapport 29 August 2006 (29.08.2006)</p> | |
| <p>Bureau international de l'OMPI 34, chemin des Colombettes 1211 Geneva 20, Switzerland no de télécopieur +41 22 338 82 70</p> | <p>Fonctionnaire autorisé Beate Giffo-Schmitt e-mail: pt03@wipo.int</p> |

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

TRANSLATION
PCT

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

(PCT Rule 43bis.1)

| | | | |
|---|--|---|---|
| <p>Applicant's or agent's file reference CP 61123</p> | | <p>Date of mailing (day/month/year) See Form PCT/ISA/210 (sheet 2)</p> | |
| <p>International application No. PCT/FR2004/003129</p> | | <p>International filing date (day/month/year) 06.12.2004</p> | <p>Priority date (day/month/year) 04.12.2003</p> |
| <p>International Patent Classification (IPC) or both national classification and IPC C01G1/02, C01G1/12 C01G11/02 C01G23/00 C01G23/047 C01G51/00 C01G53/11</p> | | | |
| <p>Applicant CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE (CNRS)</p> | | | |

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| <p>1. This opinion contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p> |
| <p>2. FURTHER ACTION</p> <p>If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.</p> <p>If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.</p> <p>For further options, see Form PCT/ISA/220.</p> |
| <p>3. For further details, see notes to Form PCT/ISA/220.</p> |

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| <p>Name and mailing address of the ISA/EP</p> | <p>Authorized officer</p> |
| <p>Facsimile No.</p> | <p>Telephone No.</p> |

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/FR2004/003129

Box No. I

Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
 This opinion has been established on the basis of a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of international search (under Rule 12.3 and 23.1(b)).
2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material
 a sequence listing
 table(s) related to the sequence listing
 - b. format of material
 in written format
 in computer readable form
 - c. time of filing/furnishing
 contained in the international application as filed.
 filed together with the international application in computer readable form.
 furnished subsequently to this Authority for the purposes of search.
3. In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/FR2004/003129

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|---|--|------|-------------|--------|------|-----|--|--------|--|----|---------------------|--------|----|-----|--|--------|------|----|-------------------------------|--------|------|-----|--|--------|--|----|
| Box No. V | Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>1. Statement</p> <table> <tr> <td>Novelty (N)</td> <td>Claims</td> <td>1-15</td> <td>YES</td> </tr> <tr> <td></td> <td>Claims</td> <td></td> <td>NO</td> </tr> <tr> <td>Inventive step (IS)</td> <td>Claims</td> <td>15</td> <td>YES</td> </tr> <tr> <td></td> <td>Claims</td> <td>1-14</td> <td>NO</td> </tr> <tr> <td>Industrial applicability (IA)</td> <td>Claims</td> <td>1-15</td> <td>YES</td> </tr> <tr> <td></td> <td>Claims</td> <td></td> <td>NO</td> </tr> </table> | | | Novelty (N) | Claims | 1-15 | YES | | Claims | | NO | Inventive step (IS) | Claims | 15 | YES | | Claims | 1-14 | NO | Industrial applicability (IA) | Claims | 1-15 | YES | | Claims | | NO |
| Novelty (N) | Claims | 1-15 | YES | | | | | | | | | | | | | | | | | | | | | | | |
| | Claims | | NO | | | | | | | | | | | | | | | | | | | | | | | |
| Inventive step (IS) | Claims | 15 | YES | | | | | | | | | | | | | | | | | | | | | | | |
| | Claims | 1-14 | NO | | | | | | | | | | | | | | | | | | | | | | | |
| Industrial applicability (IA) | Claims | 1-15 | YES | | | | | | | | | | | | | | | | | | | | | | | |
| | Claims | | NO | | | | | | | | | | | | | | | | | | | | | | | |
| <p>2. Citations and explanations:</p> <p>Reference is made to the following documents:</p> <p>D1: US-A-5 427 763 A</p> <p>D2: P. AFANASIEV, C. GEANTET, C. THOMAZEAU, B. JOUGET: "Molybdenum polysulfide hollow microtubes grown at room temperature from solution" CHEM. COMMUN., VOL. 12, 2000, PAGES 1001-1002, XP002293666</p> <p>1.1. Document D1 describes a method of preparing vanadium dioxide by pyrolysis of an aerosol comprising a precursor of the metal and of a chalcogen, dissolved in a liquid, said solution being sprayed as fine droplets suspended in a carrier gas. The product obtained (VO₂) is a powder, the particles of which have a diameter of less than 1 µm, the particles therefore being of nanoscale size, but they are present as 0.5 to 10 µm agglomerates, in the form of hollow spheres (see D1, column 3, lines 27-62; column 4, lines 10-29; column 4, line 53 - column 5, line 20; column 5, lines 39-45). Finally it will be recalled that all of the elements of the 6th main group of the Periodic Table (i.e. O, S, Se, Te, Po) are called "the chalcogens".</p> | | | | | | | | | | | | | | | | | | | | | | | | | | |

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/FR2004/003129

Box No. V

Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement

1.2. The subject matter of claim 1 differs from this known method in that the method is applied to the synthesis of metal chalcogenides of lamellar crystallographic structure, of formula M_aX_b .

1.2.1. The subject matter of claim 1 therefore complies with the requirement of novelty defined in PCT Article 33(2).

1.3. The problem that the present invention is intended to solve can thus be considered to be how to provide a method of synthesizing metal chalcogenides of lamellar crystallographic structure of formula M_aX_b

1.4. The solution, as proposed in claim 1 of the present application, is not considered to be inventive (PCT Article 33(3)) for the following reasons:

The "use of an aerosol pyrolysis method" feature is merely one of a plurality of obvious options that a person skilled in the art seeking to solve the stated problem might select, depending on each particular case, and without an inventive step being involved.

1.5. Dependent claims 2-14 do not contain any feature which, in combination with the features of any one of the claims to which they refer, meets the requirements of the PCT in respect of inventive step.

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No. PCT/FR2004/003129

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

2.1. Document D2 states that nanoscale MS_2 particles (where $M = Mo, W$) in the form of nanotubes or in the form of fullerenes are known in the prior art (see D2, page 1001, left-hand column, 2nd paragraph).

2.2. The subject matter of claim 15 differs from these known nanoparticles in that they are in the form of nanoboxes consisting of right and rectangular parallelepipeds, which are closed and generally hollow.

2.2.1. The subject matter of claim 15 therefore complies with the requirement of novelty defined in PCT Article 33(2).

2.3. The problem that the present invention is intended to solve can thus be considered to be how to provide metal chalcogenide nanoparticles having a different morphology.

2.4. The solution, as proposed in claim 15 of the present application, is considered to be inventive (PCT Article 33(3)):
The cited prior art does not propose this novel type of morphology, nor does it give any indication that could be useful for a person skilled in the art in order to achieve the solution as proposed in claim 15.